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A NEW GENUS AND SPECIES OF WATER-STRIDER FROM CALIFORNIA (HEMIPTERA: MACROVELIIDAE)

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The present paper describes a new genus and new species of water-strider of the family Macroveliidae from California, divides the macroveliines into the subfamilies Ocelloveliinae and Macroveliinae, and then segregates the latter subfamily into the tribes Macroveliini and Oraveliini. Original keys are included to the taxa of the hierarchal categories.

The paper is based upon specimens in the collections of the authors and U. S. National Museum. We are most grateful to Miss Lisa Biganzoli, Washington, D. C. for the fine illustrations.

KEY TO SUBFAMILIES OF FAMILY MACROVELIIDAE

Head very short, shorter than width across eyes, sharply declivent just in front of eyes, subvertical, anteocular part about as long as an eye, postocularly with hind margins of eyes and front margin of pronotum subcontiguous; tarsal claws slightly preapical. (Type Genus, *Ocellovelia* China and Usinger, 1949.) South Africa ..... Ocelloveliinae, new subfamily

Head very long, much longer than transocular width, porrect, anteocular part more than twice as long as an eye; postocular part short, approximately one-half as long as an eye; tarsal claws apical. (Type Genus, *Macrovelia* Uhler, 1872.) United States (west of the Missouri River); Mexico (Lower California) .. Macroveliinae McKinstry (1942)

KEY TO TRIBES, GENERA, AND SPECIES OF MACROVELIINAE

Ocelli absent; antennae very long, each segment longer than transocular width of head; abdominal tergites and usually also sternites II–IV mostly flavous; lateotergites with prominent anterior spot on upper and lower sides of segments II–VI. Length 5.25–5.56 mm. California. (Oraveliini, new tribe) (Fig. 1) ..... *Oravelia pege*, new gen., new sp.

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SMITHSONIAN INSTITUTION JAN 2 1963

Ocelli prominent, well developed; antennae much shorter, segments I–III each shorter than transocular width, IV subequal to width across eyes (60 : 54); abdominal tergites and connexival segments without flavous markings. Length 3.75–4.00 mm. United States (west of Missouri River) (Tribe Macroveliini, McKinstry, 1942) (Fig. 2) ..... *Macrovelia hornii* Uhler (1872)

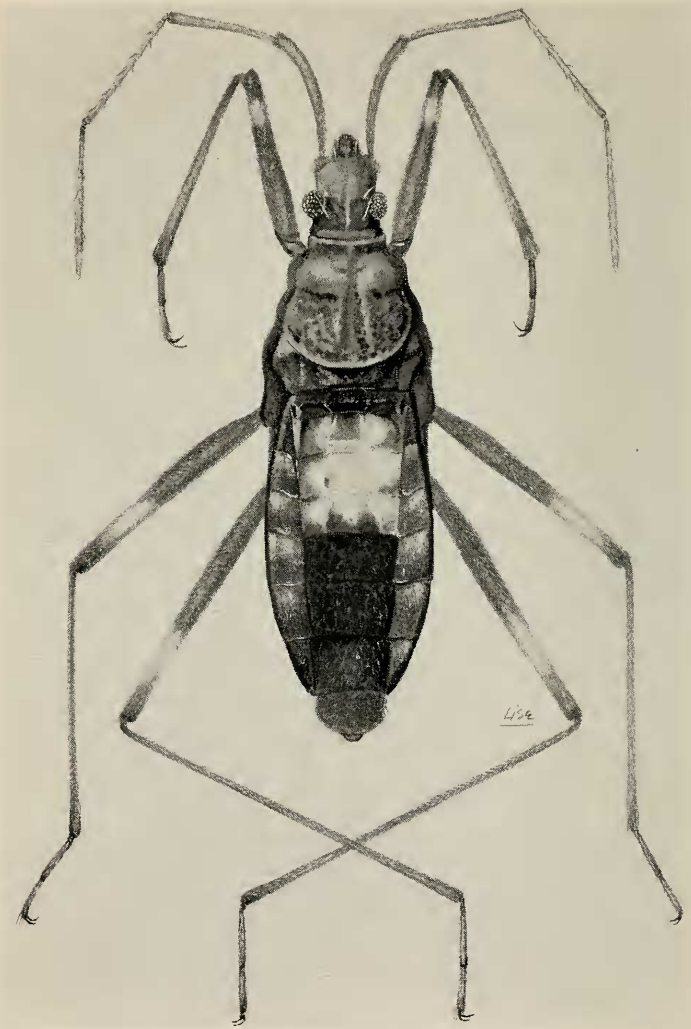

Fig. 1. *Oravelia pege*, n. sp. (holotype).

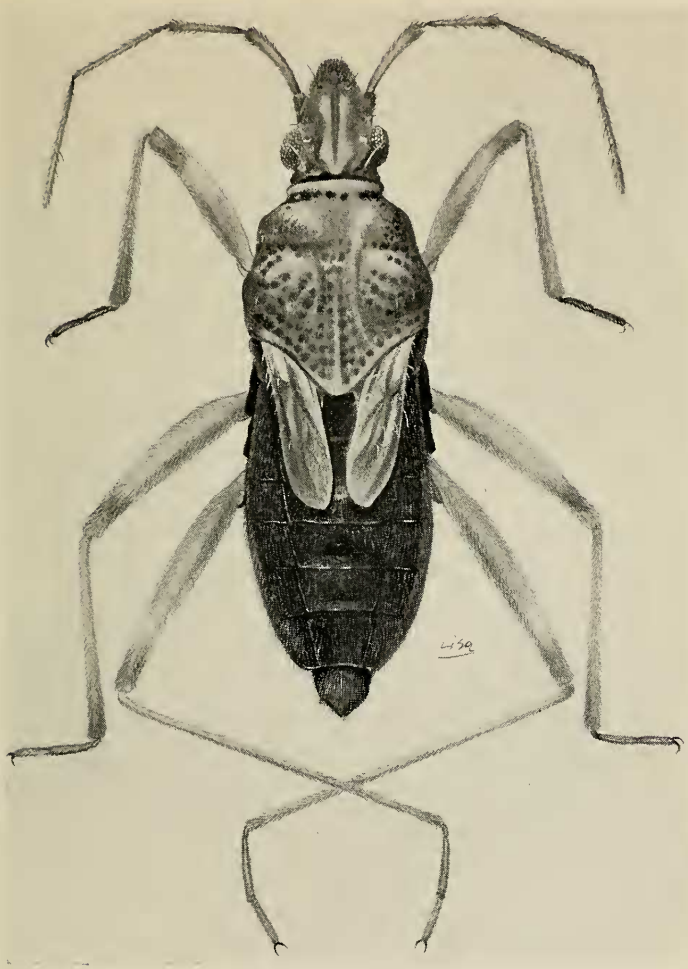

FIG. 2. *Macrovelia hornii* Uhler.

Oravelia, new genus

Apterous form: Elongate, three times as long as wide. Head very long, longitudinally sulcate, porrect, feebly curved downward in front of eyes, twice as long in front of eyes as transocular width, with three pairs of trichobothrial hairs; postocular space about half as long as the length of an eye; anteocular space three times the length of an eye; interocular space slightly greater than twice the width of an eye; ocelli absent; buccal sulcus wanting. Antennae long, slender, segments I and II

slightly thicker than apical two; I and III nearly subequal, each longer than II; IV longest. Labium long, slender, feebly bowed; segment I short, much thicker and slightly longer than II; III longest, swollen at base, then gradually tapering to apex, more than twice as long as IV.

Pronotum very wide, long, lobate, produced backwards, extending over almost all of meso- and metanotum, clearly divided across the middle into front and hind lobes; collar raised, short, impunctate, ridgelike, set off from front lobe of pronotum by a narrow cross-furrow; front lobe wide impunctate, slightly shorter than hind lobe, distinctly separated into right and left divisions by a wide, median, lengthwise impression, with a pair of large pits (1+1) in the bottom of the depression midway between the tumescent divisions; median longitudinal carina vague, lying in the bottom of the lengthwise depression, extending from the collar backward to base of pronotum; hind lobe large, coarsely rugosely punctate, broadly rounded behind, with rear and lateral margins carinate. Mesonotum very short, wide, rectangular. Metanotum shorter than mesonotum, nearly rectangular, with backward projection of hind margin short, rectangular, and occupying about the middle third of hind border.

Legs long, slender, without spines or other armature; femora only slightly swollen, the hind pair with apices slightly surpassing tip of last genital segment. Tarsi composed of three segments: segment I very short; II long, slightly longer than III; claws paired, symmetrical, apical, situated adjacent to each other, often appearing as a single claw. Rostral sulcus set off on meso- and metasternum by paired longitudinal ridges, which are slightly divergent posteriorly and become obsolete behind middle of metasternum. Metasternal omphalium well developed, openings of scent glands paired, contiguous inward, placed at middle of rear side; ostiolar canal shallow, very narrow, running across hind face just beneath ostiolar openings, then arcuately curving forward and outward on each side, imperceptible on either metapleuron.

Abdomen broad, long, more than twice as long as wide, gently tapering backwards; tergites 2–4 each with a pair of longitudinal ridges divergent posteriorly, each ridge concave on inner side; laterotergites wide, reflexed obliquely upward, distinctly sutured off from one another and from abdominal sternites; connexival segment VII not prolonged rearward.

Macropterous and brachypterous forms unknown.

Type species: *Oravelia pege*, n. sp. (Fig. 1).

This genus is allied to *Macrovelia* Uhler but is easily distinguished from it by the lack of ocelli, much longer legs and antennae.

The absence of short- and long-winged forms in *Oravelia* and of the apterous form in *Macrovelia* makes it impossible to collate alary and pronotal structures between the genera. The extremely short, sharply declivous head and position of the compound eyes separate at once *Ocellovelia* China and Usinger, of South Africa, from the macroveliines.

The ocelli are very distinct in *Macrovelia* and *Ocellovelia*, but absent in *Oravelia*.

Oravelia pege, new species
(Figs. 1, 3a, b, c, d)

Apterous form: Large, chocolate-brown, with a prominent spot on upper and a smaller one on lower sides of laterotergites II–VII, space between paired longitudinal ridges (sometimes entire segment) of abdominal tergites II–IV, coxae and trochanters of all legs, usually also abdominal sternites II–IV, and a wide subapical band on each femur flavous. Inferior side and basal half above middle and hind femora somewhat yellowish. Antenna dark brown with inferior side of segment I pale brown. Length ♂ 5.25 mm, ♀ 5.56 mm; width ♂ 1.25 mm, ♀ 1.55 mm.

Head very long, porrect, twice as long as wide, interocular space three times as wide as depth of an eye; median longitudinal furrow moderately wide, with one to two rows of tiny pits in its bottom; V-shaped impression at base of vertex pitted, becoming obsolete before reaching anterior margin of interocular space.

Antennae very long, slender, shortly pubescent; measurements: segment I, 1.12 mm; II, 0.90 mm; III, 1.15 mm; IV, 1.25 mm (all segments longer than transocular width, 0.78 mm). Rostrum long, slender: segments I and II very short, together about one-third as long as IV; III two and one-half times as long as IV (0.94 mm : 0.38 mm).

Pronotum 1.05 mm long, divided crosswise near the middle into fore and hind lobes of about equal size; collar short, truncate in front, ridge-like, deeply furrowed back of collar, coarsely pitted in bottom of furrow; median longitudinal ridge barely indicated; fore lobe swollen, impunctate, divided by a wide longitudinal impression into right and left divisions of equal size; hind lobe slightly longer than fore lobe, very coarsely punctate, with rugosity of surface frequently appearing like short broken ridges; hind and lateral margins jointly rounded, ridged.

Legs very long, slender, without armature, hind femora extended backwards with their apices projecting beyond tip of last genital segment. Fore femur 1.75 mm long; tibia 1.80 mm; tarsal segment I, 0.06 mm; II, 0.38 mm; III, 0.30 mm. Middle legs: femur 2.25 mm long; tibia 2.37 mm; tarsal segment I, 0.06 mm; II, 0.45 mm; III, 0.35 mm. Hind legs: femur 2.55 mm long; tibia 3.50 mm; tarsal segments I, 0.06 mm; II, 0.50 mm; III, 0.37 mm. Metasternal omphalium prominent, with ostioles of metathoracic scent glands paired, placed on hind ledge.

Abdomen long, broad, tergites slightly tapering posteriorly; abdominal scent gland openings placed on tergite IV slightly behind middle of segment; laterotergites wide, suberect, widest at middle, entire outer margin on each side gently convexly rounded. Male genital segments small; segment VIII beneath transversely convexly impressed; IX with parameres and aedeagus (anal lid removed) as in figures 3a–d. Female slightly stouter than male.

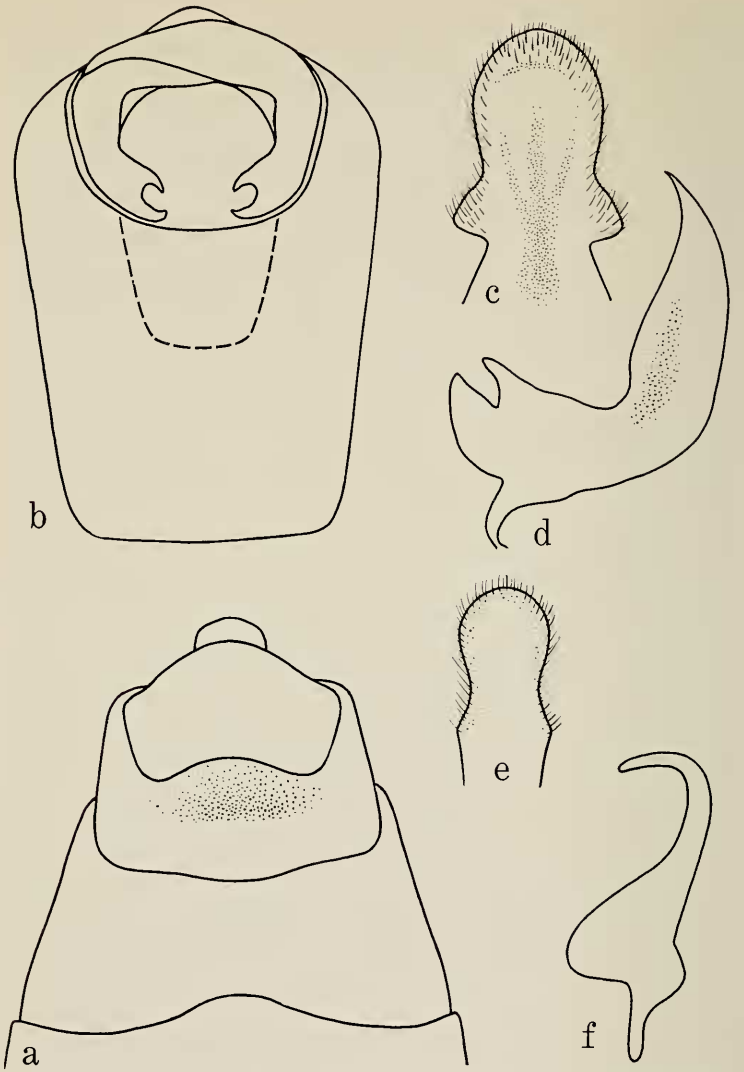

FIG. 3. *Oravelia pege*, n. sp.: a) ventral aspect of ♂ sternite VII and genital segments; b) dorsal aspect of segment IX showing parameres and aedeagus; c) anal lid; d) left ♂ paramere *Macrovelia hornii* Uhler; e) anal lid; f) left ♂ paramere.

Holotype ♂ *and allotype* ♀: Both apterous, Tollhouse, Fresno Co., Calif., 16 October 1962, Drake Coll. (USNM).

Paratypes: 8 ♂♂ and 20 ♀♀, collected with type; also 30 ♂♂ and

32 ♀♀ taken near the same spot as holotype, 1 October 1962, in collections of U. S. National Museum, California Academy of Sciences, University of California, and Southern California Academy of Sciences (Los Angeles).

The type specimens of *O. pege* were collected along the shore of a small intermittent stream (dry creek), elevation 1,600 feet, in the foothills of Sierra Nevada, near highway 168, between 2 and 3 miles southwest of Tollhouse, Calif., by H. C. Chapman. The first lot of specimens were secured by diligently searching cracks and fissures in the basal section of a 25-foot sheer rocky cliff on the shore of the creek. The face of the craggy cliff is kept constantly wet by water always oozing out of interstices of the rocks and trickling downward slowly over the rugged face into the creek. Some specimens were also taken at the same time, secreted under rocks, leaves, and other moist debris on the ground at the foot of the cliff.

In collecting a short distance upstream, several individuals were flushed off the steep bank a little above the edge of the water. Several specimens were also found on the underface of overhanging rocks above a temporary pool along the creek. In every instance, the water-striders were always found in deep shade by means of a flashlight. Unless prodded or otherwise disturbed, the specimens remained quiet in the crevices of the rocks and on the steep bank above the edge of the stream.

Genus *Macrovelia* Uhler

Macrovelia Uhler 1872, p. 422.—Kirkaldy and Torre-Bueno 1896, p. 207. —China and Usinger 1949, p. 350.

This monotypic genus is represented by *M. hornii* Uhler. It can be separated from *Oravelia* by the structures employed in the key. The ocelli are well developed, and the opening of the abdominal scent gland is situated on the median line behind the middle of tergite IV. The apterous form is unknown.

Macrovelia hornii Uhler
(Figs. 2, 3e, f)

Macrovelia hornii Uhler 1872, p. 422; 1876, p. 334; 1894, p. 289.—Gillette and Baker 1895, p. 62.—Kirkaldy and Torre-Bueno 1896, p. 207. —Van Duzee 1916, p. 44.—McKinstry 1942, pp. 90–96.—China and Usinger 1949, p. 350.—Usinger 1956, p. 219, fig. 7:34.

Moderately large, elongate, reddish or fulvous brown with varied markings of flavous and fuscous; antenna yellowish testaceous with terminal segment slightly fuscous. Opening of abdominal scent gland on median in front of middle of tergite IV. Legs yellowish with apical part of femur more or less fuscous. Hemelytron with a few white spots. Length 4.00–4.50 mm, width (across humeri) 1.35 mm.

Antennae long, shortly pubescent; measurements: segment I, 0.50 mm; II, 0.42 mm; III, 0.52 mm; IV, 0.74 mm. Transocular width, 0.72 mm.

Distribution: United States—Calif., Ariz., New Mex., Ore., Utah, Colo., Nev., N. Dak., S. Dak., Neb.; Mexico: Lower California (Uhler 1894).

This species lives largely in close proximity to permanent streams, lakes, ponds, and springs. Adults and nymphs are found in mosses growing at the water's edge and beneath rocks, logs, and other debris on the shore within a few feet of the water. They are capable of walking on the surface of the water. On several occasions, we have collected them on open water among emergent vegetation and in the narrow canal formed by the overhanging vegetation along the shore line. The lectotype, macropterous ♂, "Ft. Defiance, New Mex.," is in the U. S. National Museum (No. 1140).

Literature Cited

China, W. E. and R. L. Usinger. 1949. Classification of the Veliidae (Hemiptera) with a new genus from South Africa. Ann. Mag. Nat. Hist., ser. 12, 2: 343–354.

Gillette, C. P. and C. F. Baker. 1895. A preliminary list of the Hemiptera of Colorado. Colo. Agric. Exp. Sta. Bull. 31, Tech. Ser. No. 1: 1–137.

Kirkaldy, G. W. and J. R. de la Torre-Bueno. 1909. A catalogue of American aquatic and semiaquatic Hemiptera. Proc. Ent. Soc. Wash., 10: 173–221.

McKinstry, A. P. 1942. A new family of Hemiptera-Heteroptera proposed for *Macrovelia hornii* Uhler. Pan-Pacif. Ent. 18 (2): 90–96.

Uhler, P. R. 1872. Notices of the Hemiptera of the western territories of the United States, chiefly from the surveys of Dr. F. V. Hayden. Geol. Surv. Terr., U. S. Geol. Surv.: 392–423.

———. 1876. List of Hemiptera of the region west of the Mississippi River, including those collected during the Hayden explorations of 1873. U. S. Geol. Geog. Surv. Terr., 95 pp.

———. 1894. Observations upon the Heteropterous Hemiptera of Lower California, with descriptions of new species. Proc. Calif. Acad. Sci., ser. 2, 4: 223–295.

Usinger, R. L. 1956. Aquatic Hemiptera, *in* Aquatic insects of California with keys to North American genera and California species. Edited by R. L. Usinger. Univ. Calif. Press, pp. 182–228.

Van Duzee, E. P. 1916. Check list of the Hemiptera (excepting the Aphididae, Aleurodidae and Coccidae) of America, north of Mexico. New York Entom. Soc., 111 pp.